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RAIL TRANSPORTATION IN USSR AGRICULTURAL DEVELOPMENT

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Freight turnover on the railroads of the USSR is at present almost 13 times above the prerevolutionary level. Such a growth in freight turnover is explained principally by the increase in the amount of industrial freight: coal, iron ore, ferrous metals, machinery, machine tools, etc. The hauling of coal has increased by almost 20 times, while the proportion of coal hauled now amounts to 30 percent of the over-all freight turnover, in comparison with 19 percent in 1913. The hauling of ferrous metals has reached approximately the same volume. The proportion of industrial freight is nearly 90 percent of the total freight turnover.

The increase in the proportion of industrial freight is accompanied by a corresponding decrease in the proportion of agricultural freight. The variation of the ratios between industrial and agricultural freight in the breakdown of freight turnover is completely regular inasmuch as it reflects the variation in the ratios between industrial and agricultural output. Absolute amounts of hauled agricultural products have increased although not as sharply as those of industrial products. The hauling of industrial crops and other types of raw materials for the light and food industries has increased more than the hauling of grain and especially livestock products. By the start of the World War II, the hauling of grain had surpassed the 1913 level by more than two times, the hauling of sugar beets by almost four times, and cotton by more than three times. Since 1940, the gross production of agriculture (in comparative prices) has increased 10 percent and railroad hauling has increased correspondingly.

Great significance has always been attached to the hauling of agricultural production by rail, especially the hauling of grain at harvest time. Special preparations which involve boxcars, loading and unloading equipment, scales, and all measures to insure the preservation of the gathered grain and its safe and quick delivery, are made for the beginning of the grain harvest. During the 5-year plans the car park has been greatly renovated for the hauling of perishables, and many 4-axle refrigerator cars of an improved construction have been built. New elevators, warehouses, and icing stations have been constructed in a number of regions.

Along with agricultural produce the railroads haul a large amount of freight needed by agriculture for guaranteeing production: graded seed, mineral fertilizer, tractors and various agricultural machinery, trucks, fuel, spare parts, etc.

The construction of a number of new railroad lines has played an important role in the development of agriculture.

In a number of instances the construction of new rail lines has been undertaken with the principal aim of serving agriculture. Included in these, are the Turkestan-Siberia Railroad System which was put into operation in 1931 and made possible the development of cotton growing in Central Asia. The allocation of a large part of the sown areas of the Central Asian republics for cotton growing was possible only by the importation to Central Asia of Siberian grain. The Turkestan-Siberia Railroad System was constructed basically as an answer to this important problem. In addition, the construction of this railroad system made possible development in the production of sugar beets, tobacco, and rice,

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and an increase in animal husbandry. With the growth of agriculture in Central Asia, enterprises of the food industry began to spring up along the railroad line -- meat combines, sugar and oil milling plants, tobacco plants, mills, and other enterprises. There has been a significant increase of sugar beets, grain, flour, and sugar in the freight turnover of the Turksib railroad system. However, the significance of the new rail system is by no means limited to its part in the development of agriculture and the branches of industry connected with agriculture. With the industrialization of the Central Asian republics, Kuznetsk coal, timber, and other freight began to be transported to Central Asia over the Turksib system.

The construction of a number of branches to the south from the Siberian main line also played a great part in the development of agriculture. Such lines as Petropavlovsk-Borovoye, Kulunda-Pavlodar, and Achinsk-Abakan were constructed first of all for the exportation of grain and livestock products from the agricultural regions of Western Siberia and Northern Kazakhstan, which are crossed by these lines. Later, these lines acquired great industrial significance. The line Petropavlovsk-Borovoye was extended through Akmolinsk to Karaganda and opened the way to the Urals for Karaganda coal over the newly constructed Akmolinsk-Kartaly line. From Karaganda the rail line was extended to Lake Balkhash and farther south to Central Asia (Moiynty-Chu) for the delivery of Karaganda coal. The line Achinsk-Abakan provided an exit to the Siberian rail lines for the coal and timber of Khakasskaya Autonomous Oblast. Industrial freight, salt and coal, is now being hauled over the Kulunda-Pavlodar line.

The completion of the Stalinsk-Barnaul and Barnaul-Kulunda lines is extremely important.

A number of other rail lines constructed in various parts of the country since the revolution also play a significant role in the development of agriculture, including the Troitsk-Orsk line (a route to Magnitogorsk from the South Urals) and the transit lines Kazan'-Sverdlovsk, Gor'kiy-Kotel'nich, Ural'sk-Iletsk, Kazan'-Stalingrad (along the Volga River), Khar'kov-Kherson, Vorozhba-Orsha, Chernigov-Ovruch, Morozovskaya-Kuberle, Chardzhou-Kungrad [not completed], and many others.

Development in agricultural production demands a basic improvement in the transportation services offered to agricultural regions. This entails the construction of a number of rail lines and highways, the decided improvement of dirt roads, and a more complete utilization of river transport, small rivers in particular.

Along with the construction of new lines which are connecting new regions to the railroads and which are bringing agriculture and industry into closer relation, it is necessary to construct rail lines to serve agriculture and to increase the density of the rail net in order to reduce the number of agricultural regions removed from the railroads. Even now in the central oblasts of the USSR several populated points are located 50 to 100 kilometers from the nearest railroad station.

The expenses of railroad construction are soon paid for by the reduction in truck and wagon hauling. For example, suppose that a new rail line is 100 kilometers long and permits a 25-kilometer reduction in the run of trucks and horse-drawn wagons, and that 300,000 tons of freight [per year] are transported to and from the stations of this new line. This means that the saving in the truck and wagon hauling will be 7.5 million ton-kilometers. The cost of hauling by truck may be taken as one ruble per ton-kilometer, while the cost of hauling by horse is much more. If the average cost of hauling for both trucks

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and horse-drawn wagons is 2 rubles per ton-kilometer, the total saving from both types would amount to 15 million rubles per year. The investment in the construction of the rail line would be realized in 6 or 7 years, and in a number of instances in even shorter periods of time simply through the saving realized from the reduction of truck and horse transport.

If the volume of freight turnover is not great, the construction of a rail line just for the needs of agriculture would, of course, be unprofitable. In connection with this, the expediency of constructing narrow-gauge lines in agricultural regions must be noted. There is a sufficiently large network of narrow-gauge rail lines both for specific and general use in the sugar beet regions of the Ukraine, the republics along the Baltic Sea, and other regions of the Soviet Union. The freight density of many narrow-gauge lines amounts to 200,000-300,000 ton-kilometers or more per year. The construction of a narrow-gauge line is three times cheaper than that of a wide-gauge line, and even cheaper than the construction of an improved highway. The volume of earthwork in the construction of narrow-gauge lines is 2-3 times less than in the construction of wide-gauge lines. There is three times less metal required in the construction of narrow-gauge lines than for wide-gauge, inasmuch as light rails are used on the narrow-gauge lines and the bridges may be constructed of wood, and the locomotives and cars are considerably cheaper. It is necessary to renew the construction of rolling stock for both the existing and projected narrow-gauge lines.

The cost of hauling over narrow-gauge lines is 4-5 times higher than over wide-gauge lines, but, on the other hand it is approximately that much cheaper than the cost of hauling by truck. If we will assume that to the railroad stations of a given line 300,000 tons of freight are delivered by truck and horse-drawn wagon each year, and as a result of the construction of a narrow-gauge line the hauling distance is reduced by 20 kilometers, then the work of truck and wagon hauling is reduced by 6 million ton-kilometers, and the yearly saving will amount to 12 million rubles. This would be sufficient to repay, over a period of 2.5-3 years, the cost of constructing a narrow-gauge rail line 100 kilometers in length.

In the hauling of freight over narrow-gauge rail lines, some transferring of freight from narrow- to wide-gauge is inevitable. But not all of the freight will be transferred to wide-gauge; parts of it will go to the local market, to the factory for reprocessing, to the elevators and warehouses, etc. The rational hauling of grain requires that a considerable quantity of the grain should go to the elevators and warehouses to provide for an equal distribution to areas of demand throughout the year. Narrow-gauge rail lines could deliver the gathered grain to large elevators from whence it could be transported over wide-gauge lines. Passenger travel within a region can also be considerably improved with the aid of narrow-gauge rail lines. The question of the expediency and effectiveness of constructing narrow-gauge rail lines in agricultural regions deserves a complete and thorough study.

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